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A D D R E S S

TO

THE ROYAL GEOGRAPHICAL SOCIETY.

Delivered at the Anniversary Meeting on the 23rd May, 1870.

BY SIR RODERICK IMPEY MURCHISON, BART., K.C.B.,
PRESIDENT.

GENTLEMEN,

I address you once more in this Theatre of the Royal Institution, which, by the kind consideration of its President and managers, has been placed at our disposal. In expressing my thanks for the use of it, I am glad to say that our meetings have been frequented by many members of that distinguished body, and that thus a mutual good feeling has been established, in which I rejoice, as it was in this building that I acquired my earliest scientific knowledge, as taught by Davy, Brand, and Faraday.

I have so fully explained our position, as to the acquisition of a separate local habitation and hall of our own, in the opening of my last Address, that I have only now to add that, by the authority of the Council, I have made a strong written appeal to the Prime Minister, to grant to us apartments similar to those given to six other Societies, but as yet have received no reply.

The numbers of our Society have steadily increased; they amount now to 2263 Fellows, exclusive of 74 Honorary Members, and our warmest thanks are due, as in former years, to our Assistant-Secretary and Editor, Mr. H. W. Bates, for having laid before us the annual volume of our 'Journal' again so much earlier than it used formerly to appear; with regard to the contents of this volume, I shall have to make some remarks in the course of this Address.

OBITUARY.

Captain CHARLES STURT.—I commence the melancholy record of our losses, by a notice of one of the most distinguished explorers

and geographers of our age, as prepared by my friend Mr. George MacLeay, simply adding, on my own part, that I heartily applaud every expression in this just tribute.

Of the many hardy and energetic men, to whose bravery and intelligence we owe our knowledge of the interior of Australia, Charles Sturt is perhaps the most eminent. To him we are indebted for the discovery of the great western water-system of that vast island, between the 25th and 35th parallels of latitude, and 138° and 148° of longitude; a discovery which not only speedily led to the occupation of enormous tracts of valuable pasture country in New South Wales, but very shortly resulted in the settlement of the magnificent gold-producing colony of Victoria and its not much less successful neighbour the colony of South Australia. To him we are also indebted for the solution of the great geographical problem, the true character of the Eastern Interior of Australia, which, until he undertook his third expedition in 1844, was, by the colonists at large, as well as by many geographers, believed to be the receptacle of all the western waters, and to consist of one huge inland sea. And, further, to Sturt's instructive example we owe the series of distinguished explorers, such as Eyre, McDougall Stuart, and others, who have since so worthily and successfully trodden in his footsteps.

Charles Sturt, the eldest son of Thomas Napier Lennox Sturt, of the Bengal Civil Service, and grandson of Humphry Sturt, of More-Critchill, Dorsetshire, was born in India in 1796. After receiving his education at Harrow, he obtained a commission in the 39th Regiment, and served with it in America, France, and Ireland.

In 1827 he accompanied the 39th to New South Wales, and very shortly after his arrival in Sydney, though holding a high staff appointment, he volunteered to lead an expedition of discovery into the interior. At that time one of those droughts, which periodically afflict Australia, was at its very worst; and in the ignorance which prevailed as to the nature of the back country, of which nothing was known beyond Oxley's investigation, the deepest anxiety was felt with respect to the pent-up and struggling colony. The then Governor, General Darling, was but too glad to avail himself of the proffered services of the young soldier, and, accordingly, a well appointed party, under Sturt's command, was soon prepared and sent off. Following Oxley's track down the Macquarie, Sturt was more successful than that officer, owing to the very dry season, in

turning the marshes in which the river becomes lost; and shortly after, having struck upon the Castlereagh, he followed the course of that stream down to its junction with the noble river—until then unheard of—to which he gave the name of the “Darling.” This river, though draining an immense extent of country, was at this time, in consequence of the extraordinary drought which prevailed, very low, and, owing to strong local brine-springs, its water was found to be utterly unfit for use. Sturt was thus compelled for the time to relinquish all further investigation and to return to head-quarters. Conceiving, from the course the Darling was taking at the two different points at which he had touched upon it, that it would eventually be found to unite with the waters of the Lachlan, and the fine never-failing mountain-stream the Morumbidgee, and so form too large a body of water to be absorbed in swamps, he obtained leave in the following year to pursue the course of this last most promising river, and thus to test the accuracy of his theory. His party, on this occasion, consisted of a friend, two soldiers, and eight convicts, specially selected for the service. Running down the Morumbidgee for some weeks, the party came on the junction of the Lachlan, which was found to have reunited its waters beyond Oxley’s supposed inland-sea; and in a few days after, having taken to a boat, which had been carried in frame, the party, now reduced to eight, were launched on the wide bosom of that magnificent river, to which Sturt gave the name of the “Murray.” Ten days subsequently, after encountering some difficulty from the navigation, and very great peril from the aborigines, who were found all along the banks in great numbers, and who had never seen or heard of a white man before, they came on the mouth of the Darling, which had maintained a pretty direct course from the spot where Sturt had left it some 400 miles to the north-east,—a fact most satisfactorily verifying his prediction. Sixteen days later, after much toil, tugging at the oars from morning till night, the party came upon the great lacustrine expanse—half fresh, half salt—named by Sturt “Lake Alexandrina,” the surplus waters of which find vent through narrow channels into Encounter Bay. Not being able to launch their boat through the surf which they found rolling into the bay, there was nothing left for the party but to work their way back up the very streams which they had found it laborious enough to descend, and this they had to do on a very straitened allowance of food; their supplies, indeed, altogether failed them for some days before they reached

the teams which had been sent from Sydney to meet them. The sufferings of the party on their return were very great. Sturt never afterwards had good health, his eye-sight, in particular, becoming very seriously affected. But a great success had been achieved, which to the present day is spoken of in the colony with very great and natural pride.

After some years' employment in the public service in South Australia, the settlement of which followed very closely upon his discovery, and of which colony he was regarded as the "Father," Sturt, in 1844, volunteered another expedition, and undertook to penetrate the very centre of the "Island-Continent." This expedition was unfortunate enough. Its failure, however, was in no way to be attributed to any deterioration in the qualities of its leader. The season was one of severe drought, and, by a strange fatality, always hitting upon the most barren strips of country for his route, he again and again found himself in a hopeless desert, which it was utterly impossible to get through. A line taken a degree or so to the east in a far more favourable season, however, enabled Burke and Wills—though at the expense of their lives—and also his own Lieutenant, McDougall Stuart, to pass through the very centre of the land, and so to reach the Gulf of Carpentaria. This great achievement, the grand object of his ambition, was thus vexatiously lost to him, who would have been deemed by all the most worthy of the honour: but no man more warmly expressed his appreciation of the labours and deserts of those who subsequently succeeded in this wonderful feat than Sturt. Even as it was, his discovery of the Barcoo, or Cooper's Creek, led in no small degree to the success of those who, in more genial and suitable seasons, followed in his path. Being overtaken by the great heats of summer, in the neighbourhood of this last-named watercourse, and knowing that they should not be able to find any other water for hundreds of miles on their route homewards, Sturt's party excavated a cell under the ground, in which they had to pass six most miserable summer months; being thus compelled, in order to mitigate the frightful heat, to adopt a course analogous to that made use of in winter by Arctic voyagers to escape the effects of extreme cold.

Sturt has published narratives of these several expeditions, remarkable for succinctness, modesty, and general intelligence.

Calm and collected, this brave man never failed to inspire perfect confidence in his followers, while he secured their love and respect

by his unvarying courtesy and consideration, and the cheerful happy way in which he always met the difficulties and privations which necessarily attend such expeditions. Like all brave men, Sturt was most kind-hearted, and compassionate almost as a woman. Though frequently receiving extreme provocation, he never permitted the aborigines to be treated otherwise than with most humane forbearance. He might have boasted, had he been a man to have boasted of anything, that not one single drop of blood had been shed on any one of his expeditions. Owing to the hardships and exposure he had undergone, his constitution (which naturally was very strong), after the last expedition, completely broke down, while he became all but blind; a state of things which, of course, necessitated his retirement from public life. Some years ago he returned with his family to England, to live on the liberal pension awarded him by his favourite colony, the people of which reciprocated his kindly feelings, and always delighted to do him honour.

Modest and unassuming, he lived here among us in complete retirement, never courting notice, and certainly never seeking distinction of any kind. Yet surely such a man, when others without half his merit were receiving honours from the State, ought to have been sought out at an early period for public recognition! For a quarter of a century he was quite neglected. It was reserved for that kind-hearted nobleman, Earl Granville—when the Order of St. Michael and St. George was remodelled—at length to show proper appreciation of his deserts; and he received notice from his Lordship, in May last, that he was to be included in the list, then about to be published, of the Knights Commanders of that Order. Before, however, the ‘Gazette’ appeared, Sturt had breathed his last.

On the 16th of June this kind, gentle, modest, and brave man started on his last journey. No traveller, so bound, could have entered on it under happier or more promising auspices.

Right Hon. HENRY UNWIN ADDINGTON.—By the decease of this excellent man, in his 80th year, the Crown and country have lost one who was long a most able and conscientious diplomatist and public servant. He began his career in the Foreign Office in 1807, and already in 1808 we find him serving as an Attaché to Lord Amherst’s Mission to the Court of Naples and Sicily. Having been attached to the Missions at Stockholm, Switzerland, Denmark, and Washington, and having negotiated on two occasions between Spain and her Colonies, he was promoted to be the British Minister at

Frankfort, and afterwards held the same office at Madrid. He was twice employed as a negotiator between this country and the United States. Eventually, after all these services, he became Under-Secretary of State for Foreign Affairs in 1842, and continued in that important office for 12 years, when, on retiring in 1854, he was created a Privy Councillor.

In his varied journeys and missions Mr. Addington witnessed many remarkable scenes. Thus, when attached to Sir Edmund Thornton, at Berlin, in 1813, he was present at the capture of Leipsic by the Allied Forces, and, on entering that city with the suite of Prince Blucher, he saw the meeting of the Allied Sovereigns in the great square of that city. Subsequently he was attached to the head-quarters of General Bernadotte, then adopted as Crown Prince of Sweden.

In his last mission to Madrid he served from the autumn of 1830, during the eventful period which witnessed the abolition of the Salic Law in Spain and the succession of Queen Isabella to the throne, on the death of her father, Ferdinand VII.

As Under-Secretary of State his services were thoroughly and warmly appreciated by Lords Aberdeen, Palmerston, and indeed by every one connected with the Foreign Office, and by no one more so than by his distinguished successor the Right Hon. Edmund Hammond, to whom I am indebted for some of the above details.

For the last 10 years of his life Mr. Addington was a very constant attendant at our meetings, serving with great efficiency as one of our Council; for he was by study, as well as keen observation, an accomplished geographer.

Among the traits of character which won for him the attachment of his friends, I may here mention that, in preparing my obituary sketch of Lord Palmerston in 1866,* I was indebted to Mr. Addington for a just delineation of the leading official attributes and habits of that lamented statesman.

As a proof of his manly sincerity and loyalty, I may state that, when my valued friend, our Associate Ex-Governor Eyre, was prosecuted through what I considered to be a misdirected and unjust movement of certain persons, Mr. Addington sent to myself, as the Chairman of the Eyre Defence Fund, a sum of 50*l.*, and added personally, when bewailing the fate of the Governor of Jamaica, "If my uncle, the late Lord Sidmouth, had been Minister at

* See 'Journal of the Royal Geographical Society,' vol. xxxvi.

the time, he would at once have sent to Governor Eyre some mark of honour from the Crown, for having saved a British Colony from insurrection and ruin."

LORD BROUGHTON, G.C.B. This highly accomplished nobleman, who died in his eighty-fourth year, on the 3rd June last, lived a most eventful life. He was also, as will be explained, one of the founders of the Royal Geographical Society. Educated at Westminster School, and afterwards at the University of Cambridge, he was there associated with Byron, and other young men destined to rise to great distinction. In 1809 and 1810 he was the companion of Lord Byron in his travels through Albania and other parts of Turkey, as well as Greece. He published his well-known work, entitled 'A Journey through Albania and other Provinces of Turkey in Europe and Asia,' before he had entered upon public life, in 1813; but he improved and brought it out again in his maturer age, and when he had attained the dignity of the peerage (1855). Few works of travel have obtained a more lasting reputation; inasmuch as it is justly and equally prized by the scholar, the antiquary, and the geographer.

As the eldest son of Sir Benjamin Hobhouse, Bart., he succeeded to the baronetcy in 1812, and was the colleague of Sir Francis Burdett in the representation of Westminster from 1820 to 1833. It was during that period that I formed an acquaintance with him, which ripened into friendship. Thus it was that, in the years 1821-2, I followed the chase in Leicestershire with him and Sir Francis, just before I embarked on a scientific career. Beginning to reside in London in 1823, I became a member of the Raleigh Club of real travellers, of which Sir John Hobhouse was a member and a pretty constant attendant; and it was at that club (since converted, on my suggestion, into the Geographical Club), in 1828, that the origin of the Royal Geographical Society was broached, and in 1829 made its real start. At that time Sir John Barrow was the President of the Raleigh Club; and he, with several others, all of them except myself being now dead, held meetings at the Admiralty, and there drew out the Resolutions on which the Society was afterwards established, at a public meeting in 1830, under the Presidency of the Earl of Ripon. I have always regretted that this preamble, which I now offer, was not inserted in the first volume of our Journal.

The persons, then, who really founded the Society were Sir John Barrow; Sir John Cam Hobhouse; Robert Brown, the Prince of botanists; the Honourable Mountstuart Elphinstone; Mr. Bartle

Frere ; and myself. And of these no one was more active than Sir John Hobhouse.

In a long and successful public career, as Sir John Hobhouse, he filled successively the offices of Secretary for Ireland, Chief Commissioner of Woods and Forests, and President of the Board of Control. In this last and most important station, his administration was marked by great vigour, during several of those crises which affect at intervals our Indian empire. For his long services he first received the Grand Cross of the Bath, and subsequently was advanced to the Peerage in 1851.

During the latter portion of his life, Lord Broughton resided much in Wiltshire, and was there, as in earlier days in Leicestershire, a keen fox-hunter. Even when he had passed his seventy-fourth year, I have seen him ride with a loose rein down the steep slopes of the downs, near Tedworth House, his last country residence, where many of his old friends enjoyed, as in Berkeley Square, his true hospitality and ready wit, enlivened by the presence of his charming daughters, the Hon. Mrs. Dudley Carleton and the Hon. Mrs. Strange Jocelyn.

Admiral of the Fleet Sir WILLIAM BOWLES, K.C.B.—This well-known officer was born in 1780, and entered the Navy on board the *Theseus*, 74, in September, 1796 ; and after serving in six different ships of war, on many stations, with much credit to himself, he obtained the rank of Lieutenant as early as 1803, and subsequently that of Commander in 1806.

Being appointed to the *Zebra* (bomb), stationed in the North Sea, he saw some service, and was frequently engaged with the Danish batteries and flotilla. Having been shortly promoted to the envied rank of Post-Captain, followed by a series of commands, Captain Bowles, then in the *Medusa* frigate, co-operated with the Spanish forces, under General Porlier, and contributed to the destruction of nearly all the batteries between San Sebastian and Santander ; and in the following July, “ particularly distinguished himself by his zeal, ability, and activity, as second in command of the Naval Brigade, in a successful engagement with a strong detachment of the enemy’s troops near Santona.” In 1811 this indefatigable officer, ever on the alert where work was to be done, being again in the Baltic, in the *Aquilon*, 32 guns, completely destroyed “ seven large merchant-ships, in the face of 1500 French soldiers.”

He was then employed for several years on the South American station, latterly as Commodore in the *Amphion* and *Creole* frigates ;

and from his great attention to the interests of British commerce, received, on one occasion, "a complimentary address, and, subsequently, a piece of plate, from the mercantile representatives of Buenos Ayres."

Besides other commands, in 1822 Captain Bowles was appointed Comptroller-General of the Coast-guard, and was universally esteemed by that force for his courteous demeanour, impartiality, and strict regard to discipline. He retained it, with much advantage to the service, till November, 1841, when he attained flag rank. In May, 1843, he was selected for the purpose of conducting a particular service, and hoisted his flag on board the *Tyne*, 26, at Queenstown, but in a short time shifted it to the *Caledonia*, 120 guns, where he remained till May, 1844. He became Admiral in 1857, and afterwards was Commander-in-Chief at Portsmouth.

The well-known administrative qualities of Admiral Bowles gained for him, on two occasions, the position of a Lord of the Admiralty, and in after years he was often selected to preside over difficult and delicate enquiries requiring equal discrimination and judgment. He married, 9th August, 1820, the Honourable Frances Temple, sister of the late Lord Palmerston, but became a widow in 1838. He represented Launceston in Parliament, was created a K.C.B., and ultimately was raised to the highest rank in his profession, Admiral of the Fleet.

Sir William Bowles was for thirty-seven years a Fellow of this Society, and took the deepest interest in promoting its objects, either by aiding in the organisation of one of the Land Arctic Expeditions, or in numerous other ways of a substantial description.

Naturally benevolent, his name was greatly respected by the many institutions over which he presided, especially those of the "Sailors' Home," in Wells Street, and the "Seamen's Hospital" (the *Dreadnought*). In short, wherever the claims of the distressed mariner were advocated, he was ever ready with his pen and his purse to assist. In a brief memoir of this nature it is unnecessary to enumerate the many charitable societies to which he contributed; but it would be unpardonable to omit the Royal Naval Female School, for whose welfare he manifested an unwearied earnestness, as well as that useful establishment, the Royal Naval School at New Cross, which may be aptly termed a nursery for sailors. For upwards of twenty-one years he was the vigilant President of its Council; and, in addition to other bounties, he generously gave 1000*l.* to the fund for its chapel.

Still in the enjoyment of health, and an almost unimpaired memory, an accidental fall caused his death, at the ripe age of eighty-nine; and it may be truly said that few men have left a more estimable name than the good Admiral Bowles.

I owe this truthful sketch to my valued friend, Admiral Sir George Back.

M. ADRIEN BERBRUGGER, one of our Honorary Corresponding Members, died at Algiers on the 2nd of July last, in his 68th year. He was known chiefly for his great special knowledge of the Archæology of Northern Africa, where he resided during the greater part of his life, and where he wrote his '*Algérie historique, pittoresque et monumentale*,' his '*Grande Kabylie sous les Romains*,' and other works. He was President of the Historical Society of Algiers, and had been a member of all the various scientific commissions appointed for special investigation in the French colony during the past thirty years.

Mr. J. W. S. WYLLIE, a gentleman who had gained distinction in the public service of India, and whose future career seemed full of promise, died on the 17th of March last, at the early age of 35 years. He was the son of General Sir William Wyllie, and was born in India in 1835. After completing his education in England, first at Cheltenham, and afterwards at Trinity College, Oxford, he returned to India, and was one of the first men appointed to the Civil Service of our great Eastern Empire by public competition. He served throughout the Mutiny in the Bombay Presidency, but was transferred in 1860 to the Presidency of Bengal, where he acted successively as private secretary to the Commissioner of Oude, Under-Secretary to the Government of India, and Secretary for Foreign Affairs. He entertained decided views regarding the Foreign Policy of our Indian Government, and, since he quitted the service, advocated the principle of non-interference in the affairs of states and tribes beyond our frontiers, with great force and eloquence, in various articles contributed to the leading reviews, to one of which I had occasion to refer in my Address of 1868.* Mr. Wyllie returned finally to England in 1868, and, in the General Election of December of that year, was returned to Parliament as Member for Hereford. He was enrolled in the same year as Fellow of this Society, and, shortly before his untimely decease, had taken part in the discussion at one of our evening Meetings.

* '*Journal of the Royal Geographical Society*,' vol. 38, p. clxxvi.

The Earl of DERBY, K.G.—This great statesman and brilliant orator, who died on the 23rd October, 1869, had been a Fellow of our Society since 1833. Educated at Eton and Oxford, he entered Parliament at the age of 21, and thenceforward pursued that most remarkable career by which he has been distinguished. Previous to his official life he was a zealous traveller in India and the United States, and so far we claim him as a Geographer.

It would be presumptuous on my part to attempt to sketch even the outlines of the political life of Lord Derby; but I may state that, whilst he represented one of the most ancient of our noble families, he was one of the most distinguished classical scholars of our age. As such he was most appropriately elected Chancellor of the University of Oxford; and I shall ever consider it one of the greatest honours I have received in life that, upon his installation in that Office, he was pleased to select me as one of those persons worthy of being admitted to the Degree of Doctor of Civil Law in that ancient seat of learning.

The career of this illustrious man has been dwelt upon in all the public journals; and, in anticipation of a full Memoir of his life, I cannot better sum up those salient features of his character, which won for him so high a place in the regard and estimation of his countrymen, than by quoting the following paragraph from the 'Times' of the 25th of last October, which concludes a very striking and animated sketch of his life:—

"We have spoken of Lord Derby chiefly as a statesman. But, after all, it is the man—ever brilliant and impulsive—that has most won the admiration of his countrymen. He was a splendid specimen of an Englishman, and whether he was engaged in furious debate with demagogues, or in lowly conversation on religion with little children, or in parley with jockeys, while training 'Toxophilite,' or rendering *Homer* into English verse, or in stately Latin discourses as the Chancellor of his University, or in joyous talk in a drawing-room among ladies whom he delighted to chaff, or in caring for the needs of Lancashire operatives, there was a force and a fire about him that acted like a spell. Of all his public acts none did him more honour and none made a deeper impression on the minds of his countrymen than that to which we have just alluded—his conduct on the occasion of the cotton famine in Lancashire. No man in the kingdom sympathised more truly than he with the distress of the poor Lancashire spinners, and, perhaps, no man did so much as he for their relief. It was not simply that he gave them a princely

donation; he worked hard for them in the committee which was established in their aid; he was, indeed, the life and soul of the committee, and for months at that bitter time he went about doing good by precept and example, so that myriads in Lancashire now bless his name. He will long live in memory as one of the most remarkable, and indeed irresistible, men of our time—a man privately beloved and publicly admired, who showed extraordinary cleverness in many ways, and was the greatest orator of his day.”

The Marquis of WESTMINSTER, K.G.—This good, accomplished and benevolent nobleman joined the Society in 1844, under one of my former presidencies. Educated at Westminster School, and afterwards at the University of Oxford, he entered the House of Commons as Lord Belgrave, and sat as member for Chester for twelve or thirteen years.

In 1845 he succeeded to the princely estates and titles of his father, the first Marquis of Westminster, and during his subsequent life he made good use of his vast wealth by giving largely and munificently to public hospitals and charities, besides laying out vast sums in the erection of churches.

Those who knew Lord Westminster well, could not but be struck with the simplicity and ingenuousness of his character, and his constant desire to do all justice to those with whom he was in any way connected. He was, besides, a liberal patron of the Fine Arts; whilst, like a true English nobleman, he supported the breed of our race-horses, which, by his predecessor, had been so much improved.

RALPH WILLIAM GREY.—By the decease of this most amiable and accomplished man, I have lost one of my most esteemed friends. Serving many years as a Member of Parliament, and having been successively secretary of Lord Palmerston and of Earl Russell, his conduct was ever such as to gain for him the esteem and, I may also say, the love of all who had any communication with him. He was for some time a member of our Council, and always took a warm interest in all our proceedings. At the time of his decease, on the 1st October last, he occupied the post of Commissioner of H.M. Board of Customs.

JOHN HOGG.—This gentleman, who died on the 16th September last, was a zealous antiquary and historical geographer, who served on our Council in former years, and was, in the years 1849 and 1850, one of the Secretaries of this Society. His published memoirs in those departments of our science which he cultivated, were very numerous; among them I may notice ‘Gebel Hauran, its adjacent

Districts and the Eastern Desert of Syria, with Remarks on their Geography and Geology,' published in 1860; 'On some old Maps of Africa, in which the Central Equatorial Lakes are laid down nearly in their true positions' (1864); 'The Geography and Geology of the Peninsula of Mount Sinai and the adjacent Countries' (1850); and 'Remarks on Mount Serbal' (1849). Mr. Hogg was a Fellow of the Royal and Linnæan Societies.

Dr. PETER MARK ROGET, F.R.S.—This venerable philosopher, who died on the 13th September last, in the 91st year of his age, had long occupied a distinguished place among the men of science of our country, and was one of my oldest scientific friends.

His chief contributions to science were physiological, and were communicated in a series of memoirs to the Royal Society, of which body he was the Secretary during many years, in association with numerous Presidents, from Sir Humphry Davy downwards. Courteous and affable in manners, he was an excellent man of business, and on more than one occasion presided over the Physiologists at the meetings of the British Association for the Advancement of Science. His reputation, indeed, stood so high, that when the Earl of Bridgwater bequeathed 10,000*l.*, to be given to those authors who should best demonstrate the glory of God in the works of creation, Dr. Roget was selected by the President of the Royal Society to write that 'Bridgwater Treatise on Animal and Vegetable Physiology' which was so well received by the public.

The last work of Dr. Roget's with which I am acquainted—the completion, indeed, of his laborious studies on this subject during fifty years—was entitled a 'Thesaurus of English Words and Phrases,' and in it we trace the same fulness, perspicuity, and closeness of research which are apparent in all his productions.

ARTHUR KETT BARCLAY. — This benevolent gentleman, who, since the decease of his excellent father, so long M.P. for Southwark, has been at the head of the great Southwark Brewery, was from his youth an ardent pursuer of various branches of Natural Science.

He cultivated for many years the science of Astronomy with success, and established a very effective observatory at his country seat of Bury Hill, near Dorking.

By his death I have lost a friend of forty-three years' standing, and who through life was respected and beloved by the large circle of those who had the privilege to know him.

SAMUEL S. HILL.—This gentleman, who died in his 72nd year,

spent the earlier period of his life in Prince Edward's Island, where his father possessed a large tract of land. After a tour through the United States and the Canadas, he published a thoughtful and useful book, entitled 'The Emigrant's Introduction.' He subsequently commenced a series of travels through the Old World, and his journeys through Greece, Syria, and Egypt having been published, his travels through Russia and Siberia, ending with a voyage round the world, justly attracted very considerable notice.

Though unacquainted with Mr. Hill myself, I learn from those who knew him well that his manners were gentle and winning; whilst his writings convey to the reader an impression of the perfect truthfulness and the guileless simplicity of his character.

Mr. CORNELIUS GRINNELL.—Cornelius Grinnell first came to this country in the year 1856, and whilst he was received with the cordiality which was due to the son of the eminent New York merchant who contributed in so princely a manner to the American expeditions in search of Sir John Franklin, his own kindness of manner and generous disposition rendered him a general favourite with all who came in contact with him.

Besides the aid and assistance rendered by Mr. Henry Grinnell in the search for our missing countrymen, we are indebted to him, in a great measure, for the equipment of those expeditions under Kane, and Hayes, and Hall which have added so much to our geographical knowledge of the Arctic seas; but, in addition to these services in the aid of science, there breathes throughout his correspondence a constant desire to promote goodwill between the two countries. Thus in March, 1855, he writes:—

"I have a letter from Sir F. Beaufort, in which he, in the most honourable manner, states that the Americans have the right to the name Grinnell Land: not that I care an iota about it myself, but this little circumstance has more weight than one would suppose; the result will be to create in the minds of many a kindly feeling towards your country."

Again, in 1855, on the departure of Hartstene's expedition to relieve Dr. Kane:—

"I believe there has been nothing left undone, on the part of the British officers, to give every possible information that could be of service. If nothing else resulted from it, it will create a good feeling between the two countries."

And in 1856, on the restoration of the *Resolute*:—

"You are, no doubt, aware that a resolution has passed both

Houses of Congress, without a dissentient voice, to restore to your Government the barque *Resolute*. I think your Government will receive her in the same kind spirit that she is tendered in, and that the act itself will have the effect to increase the friendship of the two countries."

Cornelius Grinnell was present when her Majesty the Queen received the *Resolute* from the American officers.

These short extracts will, I feel sure, induce the Fellows of the Royal Geographical Society to join with me in sympathy with the father on the loss of a son who, during his residence among us, so ably personated the feelings of his parent towards this country. We have the melancholy consolation that his untimely end was occasioned in the act of doing a kindness to a friend.

Colonel GEORGE GAWLER, K.H.—This meritorious public servant, who died on the 7th May, 1869, was very favourably known to geographers by the lively interest he took in promoting researches in South Australia, from Adelaide, during the period he acted as Governor of that colony. On his return to this country he took a deep interest in our proceedings, and during the last twelve years was a frequent attendant at our evening meetings and a very instructive speaker whenever Australian discovery was the topic. He always produced the impression that he was a sincere and truthful observer, and several of his observations respecting the probable condition of the interior of Australia have been proved to be correct by recent discoveries. Colonel Gawler was born in 1796 and served during the eventful years from 1811 to 1814 in the Peninsular war, where he led one party at the storming of Badajoz.

Mr. JAMES MACQUEEN.—As I was closing these obituary notices, I received the news of the death of that distinguished veteran geographer, my old and respected friend, Mr. James Macqueen, who died on the 14th inst., at the very advanced age of ninety-two. He was born in the year 1778, at Crawford, in Lanarkshire, and used to relate that his attention was first drawn to African geography, in the study of which he was chiefly occupied during his maturer years, by the perusal of 'Mungo Park's Travels.' During the time he was resident in Grenada, in the West Indies, as manager of a sugar-plantation, whilst reading the exciting narrative aloud to a friend one night, he noticed that a negro boy in the room stood listening very attentively, especially to those passages in which the Joliba was mentioned. The boy

being afterwards asked why he showed such interest, said that he knew all about the Joliba, and that he was a Mandingo, born in the country of the Upper Niger. The information obtained through this intelligent boy was afterwards of great use to Mr. Macqueen, when he was engaged in bringing together all that was known about the geography of the Niger, a subject on which he became a leading authority. He was the first, I believe, who demonstrated, before the discovery was actually made, that the Niger emptied itself into the Bight of Benin. Subsequently he published, through Mr. Arrowsmith, the first map, approaching to correctness, of the interior of Africa. He was a trenchant and vigorous writer, and a keen critic; but his literary productions were chiefly confined to articles in newspapers and periodicals. Some of his geographical memoirs were read before our own Society, and published in the 'Journal.' He was known also as a political and historical writer, and was, in the early part of the present century, the proprietor and editor of the 'Glasgow Herald.' As a man of action, he distinguished himself in the projection and organization of two of the most useful and prosperous chartered companies, the "Colonial Bank" and the "Royal Mail Steam-Packet Company." In making the preliminary arrangements for the latter, he visited the various countries embraced in the intended operations, and, on his retirement, received the most flattering testimonials from the Company. His memory and interest in geography and public questions were preserved, in scarcely diminished freshness, almost to the hour of his death, and his last moments were passed in great peacefulness. In him the Society has lost one of its most attached members.

The other Fellows who have departed this life, but who have not taken an active part in geographical inquiries, are Colonel W. Anderson, C.B.; Mr. F. D. P. Astley; Mr. Hugh G. C. Beavan; Captain A. Blakeley; Captain Harby Barber; Mr. H. Blanshard; General Sir Wm. M. G. Colebrooke, K.H., C.B.; Mr. Alfred Davis; Major J. W. Espinasse; Mr. A. Findlay (one of the few remaining members of the Society who joined in the year of its foundation, 1830); Mr. G. F. Harris, M.A.; Mr. John M. Hockly; Mr. R. Jardine; Mr. Wm. John Law; Mr. D. Meinertzhagen; Dr. Charles James Meller; General Alex. F. Mackintosh, K.H.; Mr. G. T. Miller; Dr. David Macloughlin; the Bishop of Manchester (Rev. Dr. Lee); Mr. Frederick North, M.P.; Mr. C. O'Callaghan; Mr. Samuel Perkes; Mr. Thomas Rawlings; Mr. Arthur Roberts;

Captain Wm. Strutt; Lord Sudeley; Mr. Theodosius Uzielli; Captain G. Whitby; and Mr. Champion Wetton.

Lastly, I am proud to record that our Society was honoured by the Fellowship of the late Mr. George Peabody, the good and meritorious philanthropist of the United States, to whom our country is so deeply indebted.

ADMIRALTY SURVEYS.*

The hydrographical surveys under the Admiralty have made their usual satisfactory progress during the past year, and, in connexion with them, the exploration of the deep sea, which was commenced in H.M.S. *Lightning*, in the summer of 1868, has been most successfully followed up in the *Porcupine* during 1869. This vessel, ordinarily employed under Staff-Commander E. K. Calver in the survey of the coasts of the United Kingdom, was placed by the Admiralty at the disposal of the Council of the Royal Society for this special and most interesting research, and being fully equipped, and supplied with the necessary instruments and scientific apparatus, she left Woolwich on the 17th of May, and continued to explore the deep-sea bed, from the northern part of the Bay of Biscay, round the west coasts of Ireland and Scotland to the Faroe Isles, until the end of September. During this period important discoveries were made in various branches of physical science, sounding and dredging operations were successfully carried out to the extraordinary depth of 2345 fathoms, or nearly three miles, and very valuable observations on deep-sea temperatures made. The expedition was divided into three separate cruises, and the scientific operations were presided over, respectively, by Dr. Carpenter, Professor Wyville Thomson, and Mr. Gwynn Jeffreys. An account of the results will be found in the 'Proceedings of the Royal Society,' as well as in a lecture delivered at the Royal Institution by Dr. Carpenter, and printed in its 'Proceedings.'

Home Coasts.—In consequence of the many calls for re-surveys of certain portions of the coasts of the United Kingdom, owing to considerable changes which are taking place, especially on the western shores of England between Anglesea and the Solway Firth; a second vessel, the *Lightning*, has been equipped to meet these demands, and will immediately commence her operations under Staff-Com-

* Furnished by Capt. G. H. Richards, R.N., Hydrographer.

mander John Richards, late in charge of the Channel Island Survey, which, as was anticipated in our last report, has now been completed. During the last summer the offshore soundings from these islands were obtained and carried as far west as the longitude of $3^{\circ} 20'$; a series of tidal observations were also made throughout the whole extent of the group, and diagrams placed on the chart, by which the precise direction and strength of the stream can be seen at a glance for each hour,—a matter of considerable importance in a region so exceptionally dangerous to strangers.

The charts of the whole group are now published in a complete state, on a scale of 4 inches to the mile, with suitable sailing directions.

Portsmouth.—Staff-Commander Hall, with a steam launch and small party, has been occupied in making a large-scale survey of the whole of the harbour,—a work much required. Accurate tidal observations have been made, and levellings carried through to Langston Harbour, in order to ascertain the probable effect of the tidal scour on Portsmouth Harbour and its bar, when the gun-boat channel connecting the two shall have been completed and opened.

A re-survey of Portsmouth Bar will next be made, with the view of ascertaining whether any change has taken place in the depth of water since it was last deepened by dredging.

Mediterranean.—Captain Nares and the officers of the *Newport* have completed the survey of the coast of Tunis and its off-lying banks, from Cape Carthage, to Tabarca Island, about a hundred miles to the westward, up to which point the south coast of the Mediterranean had been surveyed by the French. The *Newport* has also surveyed the island of Pantellaria in the Malta Channel, and re-surveyed the port of Alexandria; she passed several times through the Suez Canal, at its opening, and subsequently with the Hydrographer of the Admiralty and Director of Engineering works, who were sent to report on that great work, when soundings and sections were taken throughout the length of the canal, and a survey made of Port Said and its approach.

Strait of Magellan.—Since the last report, the *Nassau*, Captain Mayne, C.B., has returned from this survey. The result of her last season's work has been the examination of 255 miles of the channels leading from the straits into the Gulf of Pénas, and the survey of twenty anchorages or havens, most of which were previously little known; ships of any size may now pass from the Atlantic to the Pacific by this route in safety, with no lack of convenient stopping-

places, and the Hydrographic Department will shortly be in a position to issue an entirely new series of charts, from Cape Virgin in the Atlantic to the Gulf of Pénas in the Pacific, on scales which will render the navigation easy and free from risk.

On the return voyage, the *Nassau* was employed in searching for some of the numerous doubtful dangers which still disfigure our charts of the Atlantic, and whose origin in many cases it is difficult, if not impossible, to trace.

North China and Japan.—The *Sylvia*, employed on these coasts, has been mainly employed in surveying the intricate portions of the great Inland Sea of Japan, through which so great a trade now passes, including many mail and passenger vessels, as well as the ships of war of all countries.

A portion of the western shore of the Gulf of Yeddo has also been surveyed.

In connexion with this survey a considerable portion of the Upper Yang-tsze River has been explored and mapped by Lieutenant Dawson, and Mr. Palmer of the *Sylvia*.

The highest point on this river previously explored was the southern entrance of the Tung-Ting Lake, about 120 miles above the city of Hankow, and upwards of 700 miles from the sea. The labours of these officers have now provided us with maps, which have been published by the Admiralty as far as the city of Kwei-chow, which is nearly 1000 miles from the sea, and where navigation, except for the smallest class of Native boats, may be said to cease.

During last year Commander Brooker, who had ably conducted this Survey up to that time, was compelled to resign from ill health and return to England, and Navigating-Lieutenant Maxwell remained in charge. The *Sylvia* has since been re-commissioned in China for a further term of service, and Commander H. C. St. John has been appointed to conduct the Survey.

China Sea.—Staff-Commander Reed and the officers of the *Rifleman* have during the past year made an excellent survey of Balabac Strait, leading between Borneo and the Island of Palawan, from the China into the Mindoro or Sulu Sea. During this survey upwards of 2000 square miles of soundings have been obtained, in the examination of the numerous reefs and dangers which lie in and above the approach to this strait.

The *Rifleman* having been found defective was disposed of in China, and the surveying officers returned to England at the close

of last year. H.M.S. *Nassau*, under Commander Chimmo, is about to leave England in further prosecution of this survey, and its extension into the Sulu Sea and eastern passages, of which almost nothing is known, except that at present it is a most dangerous though necessary highway for sailing-ships.

Newfoundland.—Staff-Commander Kerr, with one assistant, has, in a hired vessel, during the past year completed 300 miles of the eastern shores of this Colony, in that dangerous locality north and west of Togo Island.

During the early part of the season, while the ice was closely packed on the shore north of Cape Freels, the party were employed in surveying portions of Bona Vista Bay, until driven out of it by the pack, which ultimately drove into the bay on the 12th of June, and filled its arms up with ice 10 feet thick.

During the laying of the French Atlantic Cable, the surveyors were enabled to render valuable assistance to the *Great Eastern* and her fleet, among the banks in the vicinity of St. Pierre, and in laying the shore end of the cable from that island.

West Indies.—Staff-Commander Parsons with two assistants, in a small hired sailing-vessel, has made a complete survey of the Island of Barbadoes, including a plan of Carlisle Bay, the principal anchorage, on a scale of 20 inches to the mile.

The Survey has been lately removed to the Colony of British Guayana, which, combining as it does an extensive coast-line with outlying shallow banks and the mouths of important rivers, is a work of considerable magnitude and difficulty to be undertaken with such narrow means.

British Columbia. The surveyors in this colony, under Staff-Commander Pender, have been usefully employed in examining the exposed western shores of the offlying islands northward of Vancouver Island, and in sounding the outer and rocky entrance to Queen Charlotte Sound.

One hundred and twenty miles of coast, from Cape Calvert to the south-east point of Banks, Island have been surveyed, with the various passages leading to the main inner channel. It is considered that by the close of the present year sufficient will be done to meet all the requirements of navigation and commerce for a very long period, and it is intended that the Survey shall be withdrawn.

Cape of Good Hope.—The survey of the west coast of this colony has progressed very favourably during the past year, under Navigating-Lieutenant Archdeacon: the shore from Table Bay

northerly to Lambert Cove, a distance of 130 miles, has been minutely examined, and a thorough survey made of Saldanha Bay,—a want that has been long felt.

The numerous outlying dangers, which extend in some instances for several miles from the coast between Saldanha and St. Helena bays, the exact positions of which have been very doubtful, have been a source of anxiety at all times to seamen approaching Saldanha, which will now be set at rest by the publication of a correct chart. A re-survey has also been made of False Bay, resulting in the discovery of some hitherto unknown dangers,—a circumstance of considerable importance in this much frequented locality.

The surveying party are now working northward towards the Orange River, and have suffered much inconvenience from the scarcity and brackishness of the water, and the almost entire absence of inhabitants in the vicinity of the coast, where the country is little better than a desert.

South Australia.—The surveying party in this colony have been employed in the examination of Nepean Bay and the Southern Coast of Kangaroo Island, also in completing the survey of Backstairs Passage, between that island and Cape Jervis.

It is with much regret that we have to record the deaths of Captain John Hutchison, lately in command of the Survey, and of Lieutenant Guy, his assistant, which occurred in July last, almost suddenly, and within five days of each other, from illness brought on through exposure in the execution of their duties. In the untimely deaths of these officers the Naval service has lost two able and zealous public servants.

The Survey is now being carried on by Navigating-Lieutenant Howard.

Victoria.—During the past season the survey of the Colony of Victoria has been carried on principally in an easterly direction from Port Phillip, and the coast is now completed from a few miles west of Cape Otway to Port Albert, a town about 30 miles north-east of Wilson's Promontory. A survey has also been made of Portland Bay, westward of Cape Otway.

The *Pharos*, Colonial government steamer, in which the survey is being carried on, has been employed also in assisting the laying of the Submarine Cable between Victoria and the north coast of Tasmania.

New South Wales.—The Coast Survey of New South Wales is now

complete. The work of last year has been entirely confined to deep-sea sounding, the limit of the hundred-fathom line having been determined from off Point Danger, the northern boundary of the colony, to Cape Howe, its southern extreme, a distance of 600 miles ; thus enabling the navigator, by the use of the lead, to determine his position with accuracy,—an advantage not to be over-estimated on approaching a coast where easterly gales and thick weather are by no means infrequent. Although the surveying party have been withdrawn from the coasts of New South Wales, Navigating-Lieutenant Gowland, lately in charge of it, has been kept, at the request of the Government, to examine and survey the rivers and inner waters of the colony, the expense of which they have determined to defray from colonial resources.

Queensland.—The survey of the Coast of Queensland, under Navigating-Lieutenant Bedwell, has progressed very favourably during the past year. The outer coast of Great Sandy Island from Indian Head, northward round the dangerous Breaksea Spit, and the western shore of Hervey Bay, amounting in all to 100 miles of coast-line, have been closely examined, and thickly and carefully sounded ; and perhaps on no part of the Australian continent has a survey been so much needed or been more skilfully executed. The work is carried on by two officers in a small colonial sailing-vessel.

West Coast of Africa.—The very imperfect and fragmentary surveys which existed of the entrances of some of the rivers on this coast, frequented by ships employed in the oil-trade, had become so detrimental to the interests of commerce, that last year the Admiralty attached a surveying officer to the senior officer's ship on that station, in order that he might take advantage of any opportunities which might offer, during the visits of our cruisers, to rectify the erroneous charts ; and Navigating-Lieutenant Langdon, who was selected for this duty, has already performed very good service in the examination of the mouths of the Binon and Brass rivers, the Bonny, New and Old Calabar, and the Cameroon rivers, the corrected surveys of which will shortly be published.

Mr. Langdon is at present engaged in correcting the survey of the Sherbro River.

Summary.—During the preceding year seventy-one new charts have been engraved and published, and upwards of 1200 original plates have been added to or corrected, while 139,000 charts have been printed for the use of the Navy and the public. Sailing Direc-

tions have been published for the West Coast of England and for the Channel Islands, as well as various hydrographical notices, and the usual annual works, such as Tide Tables, &c. Light Lists have been issued.

In concluding the present notice, it will not be considered out of place to record that two names well known to the nautical world in connexion with hydrographical labours have lately disappeared from the rolls of the Hydrographical Department, in the retirement of Commanders Edward Dunsterville and John Burdwood; the name of the former associated for nearly thirty years with all matters relating to charts, and the latter for a scarcely less lengthened period with the annual tide-tables and other useful compilations.

It is due to these old and valued public servants to record, and it is believed it may be done with strict truth, that in the management of their respective important departments there has never been a default throughout their lengthened term of office, and to replace them will not be an easy task.

NEW PUBLICATIONS.—*Journal of the Society*, Vol. 39.—In noticing some of the chief Geographical works published during the year, I may justly commence with the volume of our own 'Journal,' which contains the more important Memoirs presented to the Society, and is properly classed among the chief contributions to the Geographical literature of each year. The number of papers published in the volume is seventeen, of which twelve are accompanied by maps. Among those to which attention may more particularly be called are the following:—'Notes on Manchuria,' by the Rev. Alexander Williamson, illustrated by a map, in which routes are inserted from a sketch furnished by the author, who travelled from the Gulf of Liau-tung to Sansing, the most northerly city in this direction of the Chinese empire; 'From Metemma to Damot,' in Western Abyssinia,' by Dr. H. Blanc, in which is conveyed much new information regarding this region, and especially the configuration of Lake Dembea, as depicted on the accompanying map; 'Journey in the Caucasus, and Ascent of Kasbek and Elbruz,' by Mr. Douglas W. Freshfield; 'On the Basin of the Colorado and Great Basin of North America,' by Dr. W. A. Bell; 'Account of the Swedish North Polar Expedition of 1868,' by Professor A. E. Nordenskiöld and Captain Fr. von Otter, accompanied by a map, in which the bays of the northern part of the islands are laid down according to tracings supplied by the authors; 'Report of the Trans-

Himalayan Explorations during 1867,' by Captain T. G. Montgomerie, containing the visit of the Pundits to the gold-mines of Western Tibet; 'Narrative of a Journey through the Afar Country,' by M. Werner Munzinger, the zealous and able agent of this country, previous to and during the Abyssinian war; a most valuable contribution to the geography and ethnology of a part of Eastern Africa of which scarcely anything was previously known, the accompanying map being drawn from the author's own sketch; 'Journey of Exploration to the Mouth of the Limpopo,' by St. Vincent Erskine; and lastly, 'Notes on the Map of the Peninsula of Sinai,' by the Rev. F. W. Holland.

Petermann's 'Geographische Mittheilungen.'—The principal Geographical publication of the continent of Europe, as I have had occasion in previous years to remark, is the 'Geographische Mittheilungen,' edited by our Medallist and Honorary Corresponding Member, Dr. Petermann, and published by Justus Perthes, of Gotha. The large number of maps, so attractive for their fulness of detail and the amount of new information they impart, is a well-known feature of this important and truly scientific serial. During the past year I remark, in the first place, highly-finished maps of the English surveys made in Abyssinia during the war, with corresponding text, in which the march of our army, and the new information gleaned concerning Abyssinian geography, are given in a clear and attractive manner. In the fifth part for 1869 there is also an account of the most recent scientific expeditions of the Russians in Central Asia, and a map of the Thian-Shan system between Issyk-Kul and Kashgar, both of which ought to be consulted by those interested in the geography of Turkistan. A sketch-map of the great French Expedition from Cambodia to the Yang-tsze-Kiang is also given in the same part, in anticipation of the French official map not yet published. Other Memoirs of value are the following:—'Scientific Results of the first German Arctic Expedition,' by W. V. Freeden (Part VI.); 'Eduard Mohr's Astronomical and Geognostic Expedition in South Africa' (Parts VII. and VIII.); 'Latest Travels and Explorations in China: Baron von Richthofen's Geological Investigations since September, 1868' (Part IX.); 'The Telegraph Expedition on the Yukon in Alaska,' with map (Part X.); 'New Guinea: a German Appeal from the Antipodes,' with map of New Guinea (Part XI.), a communication worthy of attention by those who take an interest in our settlements in tropical Australia, and in the prospect of a German colonization of New Guinea and

the neighbouring islands; Mauch's 'Travels in the Interior of South Africa,' with map; 'Sketch of the Physical Geography of the Sutlej Valley,' by Dr. F. Stoliczka (Part I., 1870), and others, which the limited time at my disposal precludes me from enumerating.

Keith Johnston's last Works.—What Petermann is to the Continent of Europe, our associate Keith Johnston is to the British Isles and the Colonies. His last works, to which I have alluded in a former Address, demonstrate the results of pertinacious and exhaustive labours, which bring out in salient relief, in clear tables and beautiful maps, all the latest geographical acquisitions.

I shall allude elsewhere to the treatise of his son on the discoveries of Livingstone, and I hope that at our next Anniversary Meeting the father of this family of geographers, of whom Scotland is so proud, will be placed on the same footing as Arrowsmith of England and Petermann of Germany, by being assigned one of our Royal Geographical Medals.

Kohl's 'History of the Discovery of Maine.'—I must not here omit to notice a work of great value, on the history of geographical discovery, which has been issued during the past year under the auspices of the Maine Historical Society. Under the general designation of a 'History of the Discovery of Maine,' this elaborate work is, in truth, a history of the discovery of the East Coast of North America, from the time of the Northmen in 990, to the Charter of Gilbert in 1578. Its author is Mr. J. G. Kohl, of Bremen, whose name is already well known to us by his numerous books of travels, works, not antiquarian only, but based upon his personal observations in America and most of the principal countries of Europe.

In this new volume Mr. Kohl has given, in a compact and lucid manner, the results of a most laborious investigation of the scattered and often obscure documents which survive from the early times of which he treats. The work is illustrated by extracts from no less than three-and-twenty maps, the latest of which is Mercator's of 1569. It may well be imagined that when a volume, embodying such documents as these, has the abstruse subjects of which it treats dealt with by a man of extensive reading, untiring industry, and remarkable critical sagacity, such as Dr. Kohl, I am drawing your attention to a work of no ordinary importance. It is, in truth, a handbook to the history of Western discovery; and it is much to be regretted that its circulation should be limited to the members of a private Society in America. I may observe that it was at the suggestion of one of our Secretaries, that Mr. Kohl

was invited to undertake this responsible and laborious task, and Mr. Major is justly proud of so successful and honourable a result.

Marcy's '*Voyage à travers l'Amérique du Sud.*'—Although not coming within the definition of scientific geography, illustrated books of travel are deserving of some notice in a summary like the present, as tending greatly to diffuse a knowledge of distant regions and a taste for geography among the great body of the public. In our early days the copiously illustrated quarto books of voyages, which were then the usual form of publication, were the delight of young readers imbued with the spirit of adventure; but the production of this class of works seems of late years to have been abandoned by our English publishers. In France such books continue to appear, and with a profusion of beautiful engravings and a luxury of type and paper which excite our astonishment, more particularly as they appear intended for, and succeed in obtaining, a wide circulation. One of these works, published by Messrs. Hachette & C^{ie}, is the '*Voyage à travers l'Amérique du Sud,*' by M. Paul Marcy. It contains a narrative of travel and adventure across the continent of South America at its broadest part, commencing with Islay on the Pacific Coast, and passing by Arequipa and Cuzco to the head-waters of the Ucayali, and so on to the River Amazons, and down that great stream to the Atlantic. The illustrations, apparently from drawings by the traveller, are to the number of many hundreds, most beautifully engraved and printed, and the landscape views more particularly convey a vivid idea of the wonderful and varied scenery through which the author passed. A work of this nature, in two large quarto volumes, and evidently intended for popular reading, could scarcely be undertaken by an English publisher, although one would think that such books, as conveying much knowledge of distant regions, by the pictorial illustrations alone, would be well received by the British public. Another work of the same class, and by the same publishers, the '*Japon illustré,*' by M. Humbert, has already attracted some attention in England, and deservedly so. The author was the Swiss Minister in Japan, who made good use of his exceptional opportunities in studying the singular country and people amongst whom he lived. Most of the engravings, which thickly stud the two handsome volumes, appear to have been copied from photographs, and are most satisfactory for their evident fidelity. The text, too, forms pleasant and instructive reading, and stamps M. Humbert as a thoughtful observer and pleasing writer.

Millingen's 'Wild Life among the Koords.'—An interesting volume, with this title, has recently appeared from the pen of Major F. Millingen, whose earlier work on Turkey was noticed in one of my former Addresses. Together with some curious and entertaining descriptions of wild life in the remoter districts of Koordistan and Armenia, this work gives us geographical notices of many little-known parts of this region; such as the valley of the Ennis and its junction with the Upper Euphrates, Lake Nazik; the navigation, harbours, &c., of Lake Van; Lake Ertjek, with its poisonous waters; and the tract of territory lying being Lake Van and the Persian frontiers, forming the watershed between the Caspian and the Persian Gulf. A map accompanies the work, in which these various new features are delineated from information furnished by the author.

Italian Geographical Society.—Our distinguished Foreign Associate, the Commander Cristoforo Negri, who worthily presides over the geographers of Italy, has, in his recent instructive Address, dilated with much eloquence on the progress of geography, and on the recent discoveries in many of those distant regions in which we take the deepest interest. Following our example, he laments in his obituary list the death of Count Lavradio, so long the Portuguese Minister at our Court. Although this highly-cultivated and much-respected man was not in our Society, he belonged to the affiliated body, the Hakluyt Society, and took a warm interest in eliciting every portion of knowledge relating to the earliest discoveries of the Portuguese in Africa and the Indies. Our Secretary, Mr. Major, in his memorable work, the 'Life of Prince Henry of Portugal,' of which I spoke to you in a former Address, has, indeed, done full justice to Count Lavradio, and I now add my tribute to the memory of this learned man.

The geographical knowledge of Count Lavradio was so extensive, his heart so thoroughly devoted to the advancement of the cause, and he was so justly proud of being the descendant of Francisco d'Almeida, the first Viceroy of India, that he well deserves due praise from the hands of a Geographical President. The maps which, by his exertions, were extricated from the archives in Portugal, threw great light on mediæval geography; and among them are those maps of Africa which were constructed at the period when the Pope allotted so very large a part of that vast country to his faithful Portuguese.

Signor Negri's comments on the recent discoveries in Africa are very attractive, and I rejoice in knowing that the Italian Society has now reached the large total of upwards of 1000 members.

The Canal of Suez.—As the opening out a navigable communication between the Mediterranean and the Red Sea is unquestionably the greatest work of our age, let us offer our warmest congratulations to M. de Lesseps for having conceived and completed a project which was at first thought impossible by many; but in which—much to their honour—his countrymen, the French, have throughout been his vigorous supporters. Still, without the hearty concurrence of the Khedive of Egypt and his munificent aid, this very difficult operation could never have been realised. This water-communication, or Bosphorus, which has insulated Africa, has been well styled by Cristoforo Negri, the President of the Italian Geographical Society, the “Straits of Lesseps,” just as the Straits of Cook, Magellan, and Behring bear the name of those who first navigated in those waters.

For the honour of our Society, it is right to record that the ruler of Egypt specially invited your President to attend the great ceremony of the opening of the Canal, and nothing more mortified me than being obliged, from the state of my health at that time, to decline the proposed distinction. Anxious, however, that our body should be well represented, I induced my friend, Lord Houghton, one of the Trustees and a permanent member of our Council, to represent the Society on this memorable occasion, and the manner in which his Lordship has executed this duty met with our entire approval.

The elaborate Report on the Canal, by Captain Richards, the hydrographer, and Colonel Clarke, R.E., recently published by the Admiralty, will be reprinted in the third number of our ‘Proceedings.’*

CENTRAL ASIA. — In this year, as in the last, the chief advances in geographical knowledge have been made in Central Asia, and especially in those parts of the great mountain back-bone of the Old World which lie to the north-west of our Indian empire, and

* In reference to this subject, I may state that our Associate, Captain H. Spratt, so distinguished by his former communications on this branch of Mediterranean hydrography, which I have noticed in former Addresses, informs me that he adheres to his views respecting the inevitable direction of the silt as carried eastward from the mouth of the Nile by the steady marine currents, and hence he believes in the eventual silting up of Port Said.

in the vast territory so recently opened up to us, which is now designated as "Eastern Turkistan," in contradistinction to Western, or what really is at present "Russian Turkistan." When I addressed you at the last anniversary, I could only speak of Mr. Shaw as having successfully penetrated by Yarkand to Kashgar with his cargo of tea from Kangra, and of his having been well received by the great chief Yakoob Kushbegi, who has since been recognised under the much grander title of Ataligh Ghazi, or "Leader of the Faithful." A residence of several months in Eastern Turkistan enabled Mr. Shaw to establish friendly relations with that powerful ruler, who, as we now know, has sent a special Envoy into British India with a letter for the Queen, and another for the Viceroy of India. The latter, in a letter to myself, has expressed his gratification at the prospect of establishing friendly intercourse with this new nation, as leading to an interchange of the products of Eastern Turkistan with those of the British empire.

So long as China held that fine region in thralldom, which was the case during a whole century, down to 1864, the native Mussulman population were never more than partially subjugated; so that, as soon as a brave and sagacious leader appeared in the person of Yakoob Kushbegi, the Chinese yoke was easily thrown off, and a country, which previously was a continual hotbed of insurrection, and subject to every sort of anarchy, has now, we learn, become a well-regulated and orderly state, under the stern, yet just, rule of this one leader.

There is something quite refreshing and encouraging in the fact that the Envoy of this great ruler will, in his progress to Calcutta, have witnessed a great Durbar of Indian Princes assembled under the presidency of our Queen's son, the Duke of Edinburgh, and that, after having seen some portions of our army and of our marine, of the latter of which the '*Galatea*' frigate will be a favourable specimen, he will return to his native Turkistan, impressed with a deep sense of the value of an intimate alliance with an adjacent empire possessing such colossal resources.

The accidental meeting, at Shadula on the Himalayan frontier of Eastern Turkistan, of Mr. Hayward, the Envoy from our Society, and Mr. Shaw, which at first sight was naturally viewed with suspicion by the Yarkandi people, has in the end proved very advantageous to us as leading to a great addition to our knowledge. For as soon as the Ataligh Ghazi had satisfied himself that our countrymen were respectively engaged in very different occupa-

tions—the one seeking to open out a trading intercourse, the other endeavouring to delineate the features of a region quite unknown to Europeans—he acted with great kindness, and has since shown his good feeling by the transmission, already alluded to, of a special Envoy to the Governor-General of India.

As Mr. Shaw is now among us, and has already communicated, at an evening meeting, an animated sketch of his travels, we may feel assured that the work he is preparing on the subject of his journey will attract, in the most lively manner, the British public.

The mission which the Council confided to Mr. Hayward has been already attended with highly important results. For although we know not as yet whether he has succeeded in entering the great lofty plateau of Pamir, which was the main object of his travels, for it is possible he may have been by native tumults deflected from that purpose, or by the impracticability of traversing the mountainous tracks east of Gilgit, which lie to the west of the territories of Cashmere and the British outposts, yet he has already well employed his time in taking a route which led him to Yarkand, and in course of which he fell in with Mr. Shaw. Whilst waiting in a state of surveillance at Shadula on the frontier, he contrived to escape the vigilance of his guards, and crossed the mountain ranges near the sources of the Yarkand River to survey the country. It was during this rapid excursion that he was enabled to make very great additions to our geographical knowledge. He demonstrated, for the first time, the true course of the Yarkand River, as well as that of the Karakash, ascended to the sources of the former, on the northern slopes of the Karakorum, and obtained information of a better pass, the Yangi, over the Kuen Lun, than the one at present used by traders. He was, moreover, enabled to sketch the outlines of this remarkable mountain-region, with its glaciers and fertile valleys, and also to lay down, for the first time, a number of positions of latitude, longitude, and altitudes, which were hitherto entirely undetermined.

We cannot too much admire the zeal, talent, and singular courage displayed by Mr. Hayward in carrying out these researches, in a country in which, had the inhabitants discovered the only small scientific instrument he possessed, they might at once have killed him.

Nothing daunted by his first failure to penetrate to the Pamir Steppe, he is now endeavouring, since his return from the Yarkand and Kashgar journey, to traverse the country occupied by those

warring and savage tribes who hold the passes which lie to the south of that great plateau. If he should succeed in this traverse, he apprehends that he will have comparatively little difficulty in exploring the Pamir Land, its nomad Kirghis inhabitants not being savage or warlike. In case, however, that he should find it impossible to run the gauntlet once more by repassing the hostile tribes lying between Pamir Land and British India, he expresses a hope that we should endeavour to obtain the sanction of the Russian Government, that in that case he might be permitted to return to England by passing through Russian or Western Turkistan.

Acting in the name of the Society, and by the authority of the Council, I have had the satisfaction of learning that, in virtue of the appeal which I made to the Geographical Society of St. Petersburg, the Imperial Government has sent the requisite order to the Governor-General of Turkistan to offer to Mr. Hayward all aid and assistance, and a free passage through these territories to Europe.

If, then, I couple this gratifying fact with the very successful recent mission of our Associate, Mr. Douglas Forsyth, to the Court of St. Petersburg, in order fully to lay before the Emperor and his Ministers the exact state of affairs in regard to the great region which, on the north-west, lies between British India and the Thian Chan Mountains, which have hitherto been the Russian boundary, I see in these circumstances cause for rejoicing that there is every prospect of a harmony of views between the Russians and ourselves regarding this great region. I rejoiced when I learnt from Mr. Forsyth himself, that both the Emperor and his enlightened Minister, the Prince Gortschakoff, are willing to maintain the boundary of the Thian Chan, and to undertake not to advance the Russian forces into Eastern Turkistan. As I have long suggested that, for the benefit of Britain and Russia, the large Mussulman territory of Eastern Turkistan—now completely independent of China—should be allowed to lie as a neutral region, which may prove thus a source of lucrative trade both for Russia and England, I am the more rejoiced at the present aspect of affairs than in any preceding year. And now that such intervening country is in a well-ordered condition, thanks to the unflinching power of the Ataligh Ghazi, we may look to a durable arrangement and good understanding on this northern frontier of British India.

If a successful trade should be established between British India and Eastern Turkistan, we must ever recollect that the first step

taken in it was the work of our able Associate, Mr. Douglas Forsyth, who, by the transmission of a single horse-load of Indian tea, propitiated the great chief, who is now our ally; and we must all feel much indebted to the present Viceroy of India, the Earl of Mayo, for the warm interest he has taken in sustaining and supporting the enterprises which have led to so desirable a result. It is indeed my pleasing duty to inform the Society that the Viceroy has charged Mr. Forsyth with a special mission to the Ataligh Ghazi, in which he is to be accompanied by Mr. Shaw, who for this purpose has been recently recalled from this country by a telegram from the Viceroy. The friendly intercourse between British India and Eastern Turkistan will thus be permanently settled.

In considering the value of the intercourse between British India and Eastern Turkistan which has recently been brought about, I must not omit to do justice to Sir Henry Rawlinson, who on previous occasions has drawn our attention vividly to the important results which must follow from explorations of our North-Western frontiers. I refer you to our 'Proceedings' for the able delineation, in which, quoting the letters of our accomplished and zealous Associate, Mr. Douglas Forsyth, he places the whole subject before us in a masterly style. Sir Henry Rawlinson's speech, delivered at our first meeting of the past session, is so pregnant with knowledge, and so clear in describing the advances made by our envoy, Hayward, and the other explorers, that I commend you to peruse the report of it in our 'Proceedings,' followed, as it is, by the last speech ever made to us by our ever-to-be-lamented Associate, Lord Strangford, as a compendium of nearly all that can be said upon this broad subject geographically, commercially, and politically.

I have already referred to the fact that the Chinese had held Eastern Turkistan in subjection for about a hundred years; and, indeed, their latest conquest of that country dates only from about the middle of the last century. But it may not be without interest, as an illustration of the great antiquity of the Chinese power, and the vitality that it possessed through a great series of ages, to observe that this was by no means the first time that the regions in question had formed a part of the empire. I learn from Colonel Yule that Chinese scholars date the spread of its influence in that direction from the second century before our era; and in the first century after the birth of Christ the Chinese power extended across the Bolor even to the shores of the Caspian! In the following ages it was subject to great fluctuations; but under the great Thang

dynasty, in the seventh century, the whole of the country east of the Bolor was under Chinese authority; and even west of the mountains, provinces extending to the frontiers of Persia were claimed as subject, and organized, at least on paper, with all the elaboration of the Chinese system. The conquests of Chingghiz and his successors again brought the states of Turkistan under the same supremacy with China. When they fell, the indigenous dynasty which succeeded them in China held little beyond the limits of China Proper; and it was not till the existing Manchu dynasty was in the height of its power that Eastern Turkistan for a third or fourth time, and, probably, for the last time, became united to China. Such a long series of vicissitudes almost reminds one of geological and ante-historical successions and oscillations.

Russians in Central Asia.—Whilst our own countrymen have thus been largely adding to our acquaintance with Eastern Turkistan, the Russians have extended geographical knowledge throughout Western Turkistan, a large portion of which has been all but annexed to the Russian empire, the chiefs of the principal Khanats, still called independent, being to a great extent subordinate.

We learn from the communication of Baron Osten Sacken to the Imperial Geographical Society, that among the most recent of these surveys are those made by Baron Kaulbars in the central part of the Thian Chan chain, on the upper course of the River Narym, and extending to the edge of the country of Eastern Turkistan, *i.e.* from the borders of the Khanat of Kokan to the mountain Khan Tengri, near the western extremity of the Lake Issyk-kul. In ascending the affluents of the Narym, Baron Kaulbars determined that its principal source was a glacier in the mountains of Ak Schirah, on the same meridian as the east end of Lake Issyk-kul. He also explored the grand snowy chains of Sery Yassy and Kokschul, extending south-westwards to the Valley of Aksai.

The topographical surveys in the district of Zerafshan, under the direction of M. Scobélew, extend from Urmittan for 80 versts up the Zerafshan, in the valley of which river is situated the renowned city of Samarkand. This survey, and the measurement of the elevations of the so-called *Starved Steppe*, between Tschinaz and Disakh, show that that arid tract was formerly enriched by the waters of the Zerafshan, through a grand canal of irrigation of Tartar origin, which may be considered one of the greatest hydraulic works of that formerly energetic people.

Besides other surveys, one of which has extended in the direction of the caravan route from Bokhara to Kasilinsk, the Russian topographers have prepared a map of the whole of Russian Turkistan, on a very large scale. When this document reaches our map-makers, it will doubtless give quite a new geographical face to large portions of Central Asia.

Remains of extensive former brick constructions, found in the great Lake Issyk-kul, were brought to light through the exertions of General Kolpakovsky, and they have excited much curiosity. One of these masses of brick presented on its surface the form of a human figure, and weighed near 500 lbs. Already in 1857 M. Semenof had called attention to some of these ancient ruins, the existence of the places of which they are the remains is recorded in the annals of Chinese history.*

The existence of a city on the north end of Lake Issyk-kul 200 years before Christ, and also the remains of an Armenian monastery having been alluded to by Humboldt, I have no doubt that my friend M. Pierre de Tchihatchef will, in his proposed new edition of the 'Asie Centrale' of that illustrious man, develop still more all the topographical and antiquarian knowledge which has been elicited by the Russians, who thus have brought to light many ethnological data, which, through the long continuance of barbarous Turcoman rule, has remained so long unnoticed.

In terminating these observations on Central Asia, I must again express the gratification I have experienced in witnessing the highly praiseworthy efforts of the Russian geographers to lay open to the world of science the true physical features of the vast region of Western Turkistan, of which they are now, to a great extent, the rulers. In former years, I have alluded to the labours of Semenoff, Struve, and others, and very recently we have received an excellent translation, by Mr. Delmar Morgan, of a very remarkable memoir by Baron Osten Sacken, describing the mountainous region between Turkistan and the Russian boundary near Kashgar, the result of an exploratory expedition by General Poltoratsky, when accompanied by Baron Osten Sacken himself. The clearness and spirit of this memoir are such, that a sketch-map might almost be constructed from the author's word-painting; whilst the description of the flora of this highly-diversified country, and its analogy to the flora of the Himalayan mountains, will be highly appreciated by all botanists.

* See the 'Mittheilungen' of Petermann, 1858, p. 360.

Such a work, independently of other obligations conferred on us (and especially by his kind intervention, which procured the promise of the Russian Government that our envoy, Mr. Hayward, should be well received if he penetrated into Western Turkistan), influenced our Council in unanimously electing Baron Osten Sacken, the Secretary of the Imperial Geographical Society, as one of our Honorary Corresponding Members, of whom we may well be proud.

The day, indeed, has now arrived, and to my great delight, when the Russian Imperial Government on the north, and the British Government on the south, are rivals in thoroughly exploring and determining their respective frontiers, leaving between each dominion wild tracts, which will probably be for ever independent, but whose chiefs will well know how to respect their powerful neighbours.

These geographical operations are also, I doubt not, the forerunners to the establishment of good commercial intercourse, and are, I venture to think, the surest pledges of peace.

In the discussion which followed the reading of the memoir of Baron Osten Sacken, I was most happy to find that my eminent friend, Sir Henry Rawlinson, completely coincided with the views on this point which I have long entertained. It was also a source of true pleasure to me that, at the same meeting, the Chancellor of the Russian Embassy in London, M. Bartholomei, was a witness of the sincere expressions of gratification we all experienced in seeing the cordial and unreserved communication which now happily exists between the geographers of both countries. The earnest and graceful manner in which the Russian diplomatist addressed us was, I am happy to say, duly appreciated by the assembly.

WESTERN ASIA.—In dwelling upon the advances in geographical knowledge which have been made in Central Asia, we must notice in a marked manner the journey of Mr. Consul Taylor to the sources of the Euphrates, as communicated in a letter to Mr. T. K. Lynch, and published in our 'Proceedings.'* The line of exploration taken by our enterprising and learned Associate, Mr. Taylor, was intermediate to the routes taken by previous travellers, for he proceeded from the north of Lake Van, between Diadeen and Begir Kalah. By following this line, Mr. Taylor

* See 'Proceedings,' vol. xiii., p. 243.

ascertained that this region, so replete in ancient times with igneous action, is still the seat of an active volcano and many hot sulphureous springs and geysers, besides valleys which have been well filled with basalt, and subsequently deepened into abrupt gorges with precipitous sides.

AUSTRALIA.—Of the recent explorations in Australia it is right to observe that the expedition of Mr. Forrest in the interior of Western Australia, where he penetrated to E. long. $122^{\circ} 45'$, though productive of no great geographical results, was zealously conducted, in the hope of tracing some account of the bodies of certain white men who had been heard of, and which were supposed to be the remains of Leichhardt and his associates. No clue, alas! was found to identify this report, but a large additional area of salt lagoons and pebbly and sandy beds was added to the Western Colony. The feature which comes out strongly in these tracts is, that whenever granite rocks appear, water is in much greater abundance than in the sandy tracts.

As to the great mass of land forming the northern part of Australia, which, as geographers, we have termed North Australia, in distinction to South-west and East Australia, the new data that have come to our knowledge are of comparatively slight importance. For although considerable tracts on the northern sea-board opposite to Melville Island are found to be well grassed, and will ultimately, perhaps, be capable of occupation, the efforts which have been made by the inhabitants of South Australia to annex and settle in them have not been fortunate.

These subjects have recently been well illustrated by our Associate, Sir Charles Nicholson; but the chief merit of his communication, as recently given to us, consisted in the clear comparative sketch of the rise and progress of the several great Australian colonies, and the remarkable explorers they have produced.

To myself this general sketch was very refreshing, inasmuch as nearly all the adventures he traced have been dwelt on, in more or less detail, at the meetings of the Royal Geographical Society since our foundation in the year 1830. From that time we have seen little Port Phillip, then a mere dependency of New South Wales, rise into the grand and wealthy colony of Victoria; Port Adelaide become South Australia; the Moreton Bay, or northern settlement of New South Wales, expand into the grand and intertropical colony of Queensland. This general view is the more valued as

coming from one of our Fellows who occupied for many years the high post of Speaker of the House of Representatives at Sydney. But we have also to thank Sir Charles Nicholson, not for the first time, for having incited geographers to explore and do some real work in that vast region of New Guinea which lies between our northernmost Australian settlements and the rich islands of the Malay Archipelago.

Judging from the little we as yet know of the southern portion of this vast equatorial *terra incognita*, that is, the country on the south-west, it is inhabited by ferocious and savage natives, and the climate appears unfavourable to Europeans. My lamented friend, the late Mr. John Crawford, so well versed in the eastern Archipelago, lost, indeed, no opportunity of recording his decided objection to an attempt at colonization in any part of New Guinea. But, after all, when we consider the high probability of a rising commercial intercourse between Cape York and other parts of North Australia, particularly those in and around the Gulf of Carpentaria, with the British Indian settlements, it must be admitted that the future interests of Britain would be greatly damaged if any other Power were to possess itself of the south-eastern shores of New Guinea, or make any settlement whatever in our own territories of North Australia.

By recent intelligence from Australia, it appears that the Papuans are not so irreconcilably hostile to Europeans as previous accounts would lead us to believe. Mr. Chester, the Police Magistrate at Somerset, our new settlement at Cape York, reports that Captain Delargy, of the trading schooner *Active*, engaged in the *bêche-de-mer* fishery, whilst in search of a missing boat in the month of August last, was induced to try the hospitality of the natives of the south-eastern shore of New Guinea. He had a large and well-armed party with him, and was met on the beach by about 100 warriors armed with bows and arrows, who ranged themselves in order of battle; but on his making peace demonstrations, the Papuans laid aside their bows and vied with each other in showing hospitality to the strangers. They prepared a sumptuous feast of pigs, yams, taro, and a kind of jungle fowl, and sent a portion on board the boats for those who remained in them. The chiefs, after the feast, accompanied Delargy through their village, and the most friendly relations were established. In communicating this very interesting information to me, Sir Charles Nicholson suggests that our own Admiralty might be recommended, after this proof of friendliness on the part of the

Natives, to employ the vessel of war on the Cape York station in an attempt to improve our geographical knowledge of this wonderful island, and cultivate amicable relations with its spirited inhabitants.

SOUTH AMERICA.—Since my last Address, the account of the exploration of the River Juruá, by Mr. Chandless, to which I then alluded, has appeared in the 'Journal' of the Society, accompanied by a map, drawn by that enterprising and painstaking explorer, with his usual completeness of topographical detail. This memoir, and the map appended to it, was sent by him from Manaos, on the Rio Negro, from which place he afterwards sailed to explore another great tributary of the Amazons, the River Madeira. It was his intention, on this journey, to explore the large westerly affluent of the Madeira, the Beni, up to its sources in the Andes of Southern Peru, and thus set at rest the vexed question of the course of the *Madre de Dios*; but his attempt to penetrate into this difficult region was not rewarded with his usual success. The country on the banks of the Mamoré and Beni rivers was almost impassable, owing to the hostility of a tribe of wild Indians, who attacked the canoe of one of Mr. Chandless' travelling companions, and killed its owner with several of the crew. We now learn, for the first time, that an expedition sent by the Bolivian Government in 1846 to explore the Beni, and consisting of thirty-two well-armed men, besides canoe-men, was driven back by the wild Indians. Besides this formidable obstacle, it was found next to impossible to hire civilised Indians for the journey. Nothing daunted, however, our traveller entered the Beni with his canoe and small party of seven men, and ascended the little-known stream as far as a rapid, 14 miles from the mouth, which he was unable, with his weak party, to pass, and re-descended the Madeira to the main Amazons. A curious feature in the physical geography of the interior of South America is brought to light by the researches of Mr. Chandless, and those of the Peruvian and Brazilian Boundary Commission, in which *Senhor Paz Soldan* was engaged. This is, that all the chief southern tributaries of the Amazons, between the Madeira and Ucayali, flow nearly parallel to the main stream, and have exceedingly tortuous courses; showing that the western interior of the South American continent consists of a vast nearly level plain, sloping gradually from west to east, and with very little slope from the south, towards the centre of drainage.

In other parts of South America explorations and surveys are

being carried on, by the various States, with more or less activity. The Government of Brazil, as we are informed (through Mr. Chandless) by Senhor Pereira de Andrada, Secretary to the Brazilian Legation in London, have appointed an Imperial Commission to draw up a general map of Brazil, in which the costly surveys lately carried out along the great rivers of the empire will be utilised; and the Commission has offered to the Society copies of the maps and official reports on which their great work will be founded. According to the information which Mr. Chandless has received from the same quarter, an intrepid missionary of Bolivia, Padre F. Samuel Mancini, made an exploration of the River Madre de Dios, in the years 1868 and 1869, from the farthest point reached by Lieutenant Gibbon to the junction of the river with the Beni, and has proved that the course of the river is to the south of that of the Purus, of which it had formerly been considered the head-waters.

Further north, a scientific expedition, under the auspices of the Smithsonian Institution of the United States, has explored, with good results, a large portion of tropical South America. An account of one part of the expedition has recently been published by Professor Orton, who, with his companions, descended the eastern range of the Andes from Quito, and made his way, through the dense forests of the Napo and its tributaries, to the head of canoe-navigation on these rivers. The most important result of this journey appears to be a careful barometric measurement of heights, from the Andes, down the valley of the Amazons, to the Atlantic.

The Government of Chili, which has always honourably distinguished itself by the promotion of scientific investigation and the publication of the results in the completest manner, is now preparing a map of its central provinces on a scale of 1 : 250,000, embracing the most populous portions of the country, from the River Copiapo, in 27° 20', to Angol, in 37° 48' s. lat. Besides the official surveys, however, much useful geographical work is being accomplished in Chili by independent scientific explorers—amongst whom our Honorary Corresponding Member, Dr. R. A. Philippi, is one of the most active—who are gradually clearing up the doubts which have long hung over the position of mountain ranges, passes, and the courses of streams in the less-known parts of the Republic.

At the southern extremity of America our own Naval Surveyors have been well employed during the past three years in completing the examination of those intricate and difficult passages of the Straits of Magellan which occupied King and Fitzroy years ago in

the voyage which has been made classical by the pen of Mr. Charles Darwin, who sailed in the *Beagle*, one of the vessels, as Naturalist. The commander of the Expedition which has recently returned from the Straits—Captain R. C. Mayne—gave an interesting account of the survey in a Paper read before the Geographical Section of the British Association at Exeter, and described more particularly the narrow passages leading northward from the western end of the Strait, which was carefully surveyed with a view of rendering safe an interior route towards Valparaiso, free from the heavy seas of the open Pacific. The work of the survey which Captain Mayne commanded, in the *Nassau*, commenced in December, 1866, and ended last May.

ARCTIC AND ANTARCTIC RESEARCHES.—The last year has been altogether unproductive of any explorations of the Arctic or Antarctic regions. The spirited expedition of Mr. Lamont, undertaken at great cost, and which proceeded in the summer of 1869, to the coasts of Spitzbergen, entirely failed to penetrate to the eastern side of the islands, from the unusual severity of the season and the enormous increase of sea-ice.

In regard, however, to Antarctic researches, we have been reanimated by a well-reasoned memoir by Captain Hamilton, R.N. He discussed the superior advantages which the use of steam-vessels in the wide Antarctic Ocean would give us, as compared with their utility in the Arctic Seas, and gave us a very able analysis of a work by a Mr. Morrell, of New York, which may now be said to have been thoroughly discussed for the first time; for, though a copy of this rare work existed in our library, no one had published any account of the curious information which it contained regarding high southern latitudes. When in command of a small schooner, Mr. Morrell described himself as having traversed the Antarctic Ocean to a greater extent than any other navigator, in the most rapid manner, and this before the voyages of Commodore Wilkes and Sir James Ross! Comparing the accounts of the successive Antarctic researches with each other, Captain Davis, an Antarctic explorer himself, was of opinion that great scepticism must prevail as to the authenticity of this work. It would appear, indeed, that our revered authority, the late Admiral Sir F. Beaufort, rejected Morrell's story as spurious; and, in truth, the vast spaces traversed with such rapidity, and the absence of all allusion to Wilkes's Land and Sabrina Island, which the voyager is stated to

have approached, induce me to consider the work to be an ingenious Robinson Crusoe tale, fortified by some striking geographical data.

The author's exaggerated description of birds and vegetation in some of the parts visited (Auckland Islands, &c.)—productions which only exist in tropical regions—seems to demonstrate the unsoundness of the narrative regarding many parts said to have been visited.

A few more words on Physical Geography as dependent on Geology.—In the Address of last year I endeavoured, as a geologist, to define the great extent to which the present outlines of land had been determined by internal elevatory forces at various periods, by which the earth's crust was not only broken, upheaved and depressed, but was, consequently, subjected to enormous denudations. Referring you to my former disquisition, I revert for a moment to this topic to make a few additional observations on a memoir which is now published in our 'Journal.' Accounting for the formation of fjords, cañons, and benches in North America, the author, Mr. Robert Brown, has faithfully and well described these openings which he has seen in the crust of the earth; but I take leave to express my disbelief in his explanation of the manner in which he refers them to agencies like those which now prevail. Seeing the existing fjords of North America occupied by great icebergs which have descended from glaciers, and also seeing the sides of the precipitous flanks of these fjords striated and polished by ice-action, he rushes to the conclusion that these enormously deep and broad cavities have been excavated entirely by the action of ice. This, however, is a hypothesis which rests on no sort of evidence. To disprove it, I ask, where in any icy tract is there the evidence that any glacier has by its advance excavated a single foot of solid rock? In their advance, glaciers striate and polish, but never excavate rocks.

Again, in explaining the origin of those remarkable cañons in the limestone mountains of North-West America, in which rivers flow for great distances, he infers that such cavities have been entirely worn out by the waters which flow through them, and which were formerly of vastly greater dimensions.

Now, in both these cases I think the writer errs. The plain and unmistakeable geological, and, therefore, geographical fact, is, that wherever the earth's crust was broken up from beneath, it necessarily underwent great transverse cracks, which opened into fissures and caverns; and these openings, made at different times,

were then left to be operated upon in subsequent ages by all the waters which fell upon the surface, or by rivers above and below that surface, to be by them abraded and fashioned.

The true origin, however, of all such great transverse fjords or cañons, or, in short, of all abrupt fissures in hard rocks into which bays of the sea enter, or in which rivers flow, was never produced by such sea or river, but must be referred to original breaks in the crust, of which the waters have taken advantage, and have found the most natural issue.

Again, in illustrating this subject, Mr. Brown refers the origin of the great "benches" or banks of *débris* at various altitudes of North America to a letting off of waters from higher levels: on the other hand, I consider them to be distinct proofs of a subterranean upheaving of the land by which former lakes were desiccated, leaving their shores in the form of ledges or shingle-benches.

The author uses a phrase which, after all, implies an admission of my own view, when he writes: "These breaks may have been (indeed no doubt were) assisted by the volcanic disturbances which at a comparatively late period seem to have riven all the country in that region, and volcanoes in the mountains, through which these rivers flow, were the active agents of disruption.*"

The author further seems to me to demolish the theory of modern causes by showing that the channel of the Golden Gate at San Francisco has a maximum depth of 50 fathoms, which great chasm he shows is in the line of the axis of the elevation of the main chain.

How, then, with the plain evidences of the origin of such vast fissures by pure geological subterranean agency, is it possible to refer them to the superficial action of ice and rivers, which, geologically speaking, are modern agents, and have only modified the old breaks and cavities of geological times? †

* See 'Proceedings of the Royal Geographical Society,' vol. xiii., No. 3, p. 148; and 'Journal of the Royal Geographical Society,' vol. xxxix., p. 125.

† Since the above was written, I have found that a paper on this subject by Mr. J. W. Tayler, a gentleman who has spent the greater part of the last 18 years in Greenland, has been communicated to the Society, and will be published in the 2nd Part of the 'Proceedings' for the present session. In this paper Mr. Tayler combats the views of Mr. Brown, and declares, as the result of his examination of the fiords themselves, that glaciers, instead of excavating fiords, are continually filling them up. He adds that some of the largest glaciers, as that north of Frederickshaab, do not exist in fiords at all. As a conclusive argument, he gives a diagram of a fiord south of Aksut, having two arms, which could not possibly have been cut by a glacier.

AFRICA.—*Great Salt Desert at the Eastern Foot of the Abyssinian Alps.*—In former allusions to the structure of that grand eastern edge of the Abyssinian highlands along which the British army advanced, no sufficient notice has been taken by myself of a very remarkable journey made by Mr. Werner Munzinger in exploring the route which leads from Hanfila on the Red Sea to the Abyssinian highlands. A brief account of this adventurous trip was given in our 'Proceedings,' and the narrative *in extenso* is now published in our 'Journal.' The lower country passed over appears as if it had been raised up from the Red Sea itself, for it consists of coral-reefs, sandy and shelly deposits, enlivened only with a few palm-trees, and containing in its central part a vast basin of salt which lies below the level of the sea. This is the country of the Afars, who occupy a triangular tract the apex of which is Annesley Bay. Volcanic rocks abound in it, and rise into mountains at its southern end.

All the streams which descend from the Abyssinian Alps to the east are absorbed in the low sandy region, the evaporation from which, under the great heat which prevails, accounts for the desiccation.

Mr. Clements Markham has borne ample testimony to the admirable manner with which Mr. Munzinger executed the arduous duties assigned to him, whether as an explorer penetrating far into the interior of Abyssinia, or in accompanying Colonel Grant on his mission to the chief of Tigre at Adowa, or again in reconnoitring to within sight of Theodore's army at Dalanta, far ahead of the advanced posts of the British army.

In making these references to Mr. Munzinger, who is a distinguished Swiss naturalist, I am glad to find that the Queen has rewarded his services by conferring upon him a Companionship of the Order of the Bath.

DR. LIVINGSTONE.—Throughout the past year we have been kept in a state of anxious suspense respecting the position of our great traveller, Livingstone; and I grieve to close this Address without being able to offer some encouraging sentences on the prospect of speedily welcoming him home. At the same time, there is no cause for despondency as to his life and safety. We know that he has been for some time at Ujiji, on the Lake Tanganyika, whence he wrote home on the 30th May last, though unable to make any movement for want of carriers and supplies. These were, indeed,

forwarded to him by Dr. Kirk from Zanzibar, when alas! an outbreak of cholera stopped and paralyzed the relieving party. Recent intelligence, however, has reached the Foreign Office to the effect that the pestilence had subsided to so great an extent, that we may presume the communication between the coast and Ujiji has before now been re-opened.

The work which still lies before Livingstone has been often adverted to, and it is hoped that he will live to advance to the north end of the Tanganyika, and there ascertain if its waters flow into the Albert Nyanza of Baker. If the junction should be proved, we may indulge the thought that, informed as Livingstone must now be of the actual carrying out of the great project of Sir Samuel Baker, he may endeavour to meet his great contemporary. The progress of the great Egyptian expedition of Baker having been delayed in its outset, we know that it only left Khartoum to ascend the White Nile in February. After reaching Gondokoro, as was expected to be the case, in the first days of March, some time must necessarily elapse in establishing a factory above the upper rapids, and beyond the tributary Asua, where the steam-vessels are to be put together before they are launched on the Nile water, on which they are to pass to the great Lake Albert Nyanza. As soon, however, as a steamer is on that lake, we may be assured that Baker, with his well-known energy and promptitude, will lose not a moment in the endeavour to reach its southern end, in the expectation of there giving hand and help to Livingstone. Let us therefore cherish this cheering hope, which would indeed be the most happy consummation our hearts can desire.

The British public will be much better informed than they have been on this subject when they examine a recent small work by Mr. Keith Johnston, jun. In this pamphlet the author has given a succinct history of all the explorations in South Africa, and has also put together from the best authorities (Petermann and others) a map which shows clearly to what extent the rivers which flow from the southern highlands, on the south and s.s.w. of Lake Tanganyika, are for the most part independent of that lake, and may prove to be tributaries of the Congo. On the other hand, the streams which enter the Lake Tanganyika through the Lake Liemba of Livingstone, are probably the ultimate sources of the Nile itself, while the Kasai and other streams which feed the Lakes Bangweolo and Moero may be found to issue in the Congo.

If this last hypothesis should prove to be true, the waters of

which Livingstone has been the first to explore will be found to be the sources both of the Nile and the Congo. As respects the Nile, however, my sagacious friend must feel that, until he proves that some of these waters of the Tanganyika flow into the Albert Nyanza, the problem in regard to the Nile remains unsolved.*

In the mean time the Nile hypothesis of Mr. Findlay and others (that the Lake Tanganyika will be found to unite with the Albert Nyanza) is, according to the now estimated relative altitudes of these southern waters, the most probable. God grant that the illustrious Livingstone may demonstrate this to be the case, and that we shall soon see him at home as the discoverer of the ultimate sources of both the Nile and the Congo.

On this important and exciting subject it is gratifying to state that our Medallist, Dr. Petermann, has laid down, on a general map of South Africa in the last number of his 'Mittheilungen,' that which he terms a chronological sketch of all Livingstone's wonderful and arduous travels from 1841 to 1869. In respect to the tributaries of the Congo, the map of Petermann differs hypothetically from that of Mr. Keith Johnston, jun., inasmuch as he indicates that the waters of the Bangweolo, Moero and Ulenge lakes probably point to north and by east; and, if this should prove to be the case, they also will fall into the great Albert Nyanza of Baker.

In concluding the consideration of this absorbing topic, I rejoice to be enabled to state, that in consequence of my representing to Lord Clarendon the isolated position of Livingstone at Ujiji, where he was without carriers or supplies, whilst he was, comparatively, near his ultimatum, the north end of the Lake Tanganyika, Her Majesty's Government have kindly afforded the means whereby the great traveller may be effectively relieved before he returns to his admiring country.

CONCLUSION.—At the last anniversary I was placed in this chair for the usual term of two years, and, in thanking my associates for this repetition of their never failing kindness, I informed them that, if at the end of the first of the two years I should be incapacitated by infirmity, I flattered myself they would allow me then to retire, with thanks for my long continued devotion to their cause. I also

* As an ardent young geographer, Mr. Keith Johnston, jun., lays it down too broadly on the title-page of his clever work, that the sources of the Upper Nile basin are settled. Granting that this is not only the hopeful, but also the probable solution of the question, the ultimate proof, as stated above, is still required, and on that proof being obtained the return of Livingstone depends.

said that I accepted the office in the ardent hope that my dear friend Livingstone might soon return to us, so that I might have the joy of presiding at the national festival which would then unquestionably take place in his honour.

Although the first of my two years of office has passed without this happy realization of my hopes, I trust that before our next annual meeting the great traveller will have determined the grand problem of the ultimate southern sources of both the Nile and the Congo; and if I live to witness this completion of my heartiest aspiration, I will then take leave of you in the fulness of my heart, and with my warmest thanks to you, my friends, the Fellows of this Society, who have so long and so kindly supported me.
